

Gravina Access Project
Visual Impacts Assessment
Technical Memorandum
Draft



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1.0 Introduction

This technical memorandum presents the potential effects of the Gravina Access Project alternatives on the visual quality of the project area. This visual impact analysis included:

- Establishing the existing visual environment of the project area;
- Assessing the existing visual resources in terms of visual character and visual quality;
- Identifying viewer exposure and sensitivity to the visual resources; and
- Evaluating the visual impact that project alternatives would have on existing visual resources, based on the changes created by the alternative and the viewer's potential response to these changes.

The analysis identified “key views” throughout the project area that would potentially be affected by one or more of the project alternatives. Selected key views represent the important viewsheds throughout the project area, at locations of the greatest potential impact. Photographs of existing conditions from each view are presented in this memorandum, along with rendered simulations of the project alternatives potentially affecting each view. These simulations were used to assess the change in view and to determine the impacts of the alternatives on visual resources.

2.0 Descriptions of Key Views

The visual quality of Ketchikan and the Tongass Narrows is defined by:

- The natural landscape features of the area, such as Tongass Narrows, the steep topography of Gravina and Revillagigedo islands, and the heavily forested hillsides; and
- The built environment of Ketchikan and Gravina Island, including the urban and shoreline development of Ketchikan, Ketchikan International Airport on Gravina Island, and those visual elements associated with the development of Ketchikan (i.e., ships and boats, aircraft, and automobiles and buses).

Overall, the natural scenic quality of the Ketchikan area, and the juxtaposition of generally compatible urban and natural landscape elements are important in defining the overall visual quality of the study area. For this visual impact analysis, the key views were selected because they provide representative examples of the visual quality and resources of the project area, and because these are the views that are experienced both by residents of and visitors to Ketchikan.

Table 1 (below) describes each of the key views used in the visual analysis of the project alternatives and its importance relative to visual resources in the project area. The locations and directions of these views are shown in Attachment 1 in Section 5. Each key view comprises

water, sky, vegetation, natural landscape features, town buildings, structures, and other elements of the built environment (roadways, utilities, ships, etc.). Attachment 2 presents photographs of the views that show both the existing conditions and simulate project alternatives from the various viewpoints.

Table 1–Description and Importance of Key Views (Sheet 1 of 3)

* “Reserved” views are those that were identified at the onset of the visual impact analysis, but for which no alternatives were simulated because other views adequately represent the visual impacts of the alternatives.

Description	Importance
Key View 1: Looking north along Tongass Narrows from shoreline at Saxman	
<p>The view along the Revillagigedo and Pennock island shorelines toward the central Ketchikan waterfront area and beyond includes the rocky inter-tidal area, natural vegetation, and intermittent small-scale structures, primarily residences. Waterborne vessels of varying sizes, from skiffs to cruise ships, are visible along Tongass Narrows. The central Ketchikan waterfront is in the distance, with a concentration of town structures, docks, and vessels in the Thomas Basin area. The forested shoreline areas of Gravina Island are in the background. The low scale, intermittent Saxman area structures contribute to the visual quality of the scene, along with the distant image of Ketchikan beyond.</p>	<p>The view is from a primary public shore with easy access just across Tongass Avenue from Saxman City Hall, Totem Park (one of the most frequented sites by visitors in Ketchikan), and the main residential areas of the City of Saxman.</p>
Key Views 2 and 2A: Looking north on Tongass Avenue, south of U.S. Coast Guard Base (Key View 2A is slightly further south)	
<p>Vegetation along the Revillagigedo and Pennock island shorelines and the Tongass Avenue right-of-way and bike path fill much of the view. Utility poles and lines parallel the roadway and are visible against the sky. The central Ketchikan waterfront and “pockets” of Tongass Narrows and are visible, as is the wooded ridge of Gravina in the distance; more of the Narrows waterway is visible in View 2 than in 2A. Natural vegetation strongly characterizes the view.</p>	<p>The view is from the primary transportation corridor for vehicles, bicycles, and pedestrians serving all areas of Revillagigedo Island to the south. It is the first area of the corridor where views of the central Ketchikan waterfront emerge for travelers coming from further south.</p>
Key View 3: Looking south along Tongass Narrows from southern end of Berth 1 dock, downtown central waterfront	
<p>Tongass Narrows fills much of the view with its surface vessels and shoreline structures, and is framed by the edges of Revillagigedo and Pennock islands. The ridge of Annette Island is visible in the background. Waterfront structures from Thomas Basin to the U.S. Coast Guard base and beyond, along with the clustered dolphin piling in the foreground, are major visual elements. The maritime emphasis of the town is manifest in many of the visual elements.</p>	<p>Tongass Narrows represents the main visual corridor for all in the Ketchikan vicinity. The location of the view from the central dock is the furthest point south and west available from landside (and thus the furthest into the Narrows corridor itself) in the downtown Ketchikan area.</p>
Key View 3A: Looking north along Tongass Narrows from Berth 2 dock, downtown central waterfront	
<p>The edge of a moored cruise ship and tug are visible in the foreground. The skyline to the east is formed by the waterfront and town structures in the mid-town area (including Tongass Towers, Marine View, and structures around Plaza Port West), Ketchikan High School, the KPU microwave tower, and other hillside structures. To the west, the view is bordered by the ridge of Gravina Island and the airport grounds. The contrast of the relatively undeveloped Gravina Island shoreline and the Revillagigedo Island shoreline development is a clear quality of the view.</p>	<p>The view is from a point in the downtown central area that maximizes exposure to the Tongass Narrows view corridor at street level in a northerly direction.</p>

Table 1—Description and Importance of Key Views (Sheet 2 of 3)

<i>Description</i>	<i>Importance</i>
<i>Key View 4: Looking south from upper Front Street above the Tongass Avenue/Front Street tunnel</i>	
Front Street and its town structures along with the City dock structures are the close and mid-range visual elements. A cruise ship, some vegetation, and a utility pole are also visible in the foreground. Revillagigedo and Pennock island shorelines edge the view, with Annette Island visible in the background. Town architecture and its waterfront context characterize the view.	The vantage point from the higher residential area downtown adds to the southern Tongass Narrows view corridor the context of much of the townscape and dock structures, as well as increased breadth and depth that include more of the adjacent Revillagigedo and Pennock island landforms and an additional outlook to Annette Island beyond.
<i>Key Views 5 and 5A: Looking north along Tongass Narrows from upper Front Street on Knob Hill</i>	
The main visual elements are Tongass Narrows and town structures along the waterfront from approximately the City Float area to mid-town; Tongass Avenue; and adjacent hillside and vegetation. Gravina Island and the airport area edge the view to the west and the horizon. The linearity of the Ketchikan area development is well defined in the view.	The view encompasses much of the visual character of the topography and urban design of Ketchikan in its linear development along Tongass Narrows and adjacent hillside. Elements include the dense clustering of mostly small-scale, pitched-roof building forms interconnected by wooden stairways and boardwalks, and marine vessels and related structures that define the edge of town as it meets Tongass Narrows.
<i>Key View 6: Looking north toward Alaska Marine Highway System (AMHS) north berth and Alaska Ship and Drydock (ASD) from AMHS passenger terminal</i>	
The north berthing pier area with its access ramps, piling, and riprap shore and ASD structures are the main visual elements. Gravina Island and the airport area edge the view at the west. Open sky fills the upper level of the view. The view is very characteristic of basic functional Ketchikan waterfront infrastructure.	This view looks north from a major public facility on the Ketchikan waterfront along the Tongass Narrows corridor. This is a major embarkation and debarkation point for Ketchikan residents and visitors using the AMHS ferries.
<i>Key View 7: Reserved*</i>	
<i>Key View 8: Looking north from Gravina Island shoreline near the northern end of airport runway</i>	
The rocky shoreline of Gravina Island is visible in the foreground and at the west. Other visual elements are a moored barge, piling, and shoreline structures, primarily along the Revillagigedo Island shoreline. Tongass Narrows and the sky predominate in the overall image, with the forested ridges of adjacent landmasses forming the horizon. The natural state of much of the area shorelines is evident.	The outlook north from Gravina Island at the relatively undeveloped location represents the northerly view as Tongass Narrows begins to widen, and encompasses much of the Revillagigedo Island shoreline towards Ward Cove and beyond. As Gravina Island continues to host various forms of development, the view will become more frequent for area residents and visitors.
<i>Key View 9: Reserved*</i>	

Table 1—Description and Importance of Key Views (Sheet 3 of 3)

<i>Description</i>	<i>Importance</i>
<i>Key View 10: Looking south from mid-Tongass Narrows near the airport toward Pennock Island</i>	
<p>The north shoreline and profile of Pennock Island is visible, along with both the east and west channels of Tongass Narrows as they pass Pennock Island. An Alaska Ferry at ASD, a cruise ship docked at the central Ketchikan waterfront, and other shoreline structures are visible along the Ketchikan waterfront. The Gravina Island shoreline and Annette Island are visible in the background. The surrounding topography and forests as backdrop to the townscape are well defined with the view.</p>	<p>This is perhaps the most central location for views and orientation in all compass directions from the Tongass Narrows corridor itself, but particularly to the north and south. It is a frequent location for area residents and visitors alike as they transit from the airport ferry or other vessels. This view provides a rich set of project area visual references.</p>
<i>Key View 10a: Looking south on Tongass Avenue near Wolf Point</i>	
<p>Tongass Avenue, a parking area, and roadway guardrail and utility lines are in the view to the east. Tongass Narrows, the airport terminal, runway areas, and a floatplane dock are the central and westerly components. ASD structures and Annette Island are distant visual landforms. Infrastructure characterizes much of the view.</p>	<p>The view is from the primary transportation corridor for vehicles, bicycles, and pedestrians serving all areas of Revillagigedo Island to the north of Ketchikan. It is the first area of the corridor where views of the northern portions of the Ketchikan townscape emerge for travelers coming from further north.</p>
<i>Key View 11: Looking south on Tongass Avenue north of Wolf Point</i>	
<p>The Tongass Avenue roadway, its utility lines, and the gently sloping shoreline with low vegetation dominate the view to the east. Tongass Narrows and the low Gravina Island shoreline fill the view to the west. The airport structures are visible in the background, and a small float with mooring piling and log boom are in the waterway close to the Gravina Island shore. The predominance of minimally developed shoreline of the Ketchikan area outside of the central town area and presence of natural vegetation is evident.</p>	<p>The view is from the primary transportation corridor for vehicles, bicycles, and pedestrians serving all areas of Revillagigedo Island to the north of Ketchikan. The airport, a major visual reference, begins to be clearly seen in this area.</p>
<i>Key View 12: Looking north along Tongass Narrows from Bar Harbor Float</i>	
<p>Tongass Narrows and a foggy sky predominate the view. To the east are numerous fishing and other vessels moored at the Bar Harbor Float system. To the west are the outer floating breakwater, Tongass Narrows main channel, and the Gravina Island shore along the airport. The Gravina Island ridgeline disappears into the misty sky at a low elevation. The maritime character and misty weather characterize regular qualities of the Ketchikan visual environment.</p>	<p>This is another key central point of view from the largest boat harbor in Ketchikan, well into the Tongass Narrows corridor itself.</p>
<i>Key View 13: Looking northwest across Tongass Narrows toward Gravina Island from the north parking area adjacent to Plaza Port West</i>	
<p>A paved open area, the riprap breakwater to Bar Harbor and boats beyond, and small-scale commercial structures are the main visual elements in the foreground. Tongass Narrows, Gravina Island and the airport comprise the distant view to the west and north. The view is very characteristic of the relatively undeveloped, basic functional shoreline of the Ketchikan area.</p>	<p>The northward view is from a busy midtown commercial center. The development of ferry access here at the water's edge would open opportunities for public visual and physical access to the shoreline.</p>

3.0 Visual Impacts of the Alternatives

3.1 Methodology

The evaluation of effects of the alternatives on key viewsheds is based on computer simulations developed using preliminary engineering design information and models utilizing "autodesys," "formZ," and "Adobe Photoshop" software. These simulations provide a "before-and-after" representation of the alternatives, illustrating their effects on the visual qualities of each view. Visual impacts of the alternatives were qualitatively evaluated for each view based upon: the proximity and massing of the alternative; the extent to which the alternative presented a new visual element to the view; the extent to which the alternative altered the view (such as by presenting a dominant new man-made element in an otherwise primarily natural viewshed).

3.2 Results

Each existing and simulated view includes both man-made and natural features. Each of the bridge alternatives—C3(a)/(b), C4, D1, and F3—would introduce a major new visual element to most key views by adding a structure that intersects the water and visually connects separate land masses. By contrast, each of the ferry alternatives—G2, G3, and G4—would add a minor new visual element within the landscape, in the form of additional shoreline development. The impact a bridge alternative has on a particular view is dependant on the height and massing of the structure, the proximity of the structure to the viewpoint, and the existing visual elements of the view. The design elements of a new structure, such as color, texture, lighting, materials, form, and structure, can add significantly to its visual quality and improve the visual environment.

None of the alternatives would require the removal of existing townscape structures that contribute to the existing visual environment.

Views toward the project during construction would be adversely affected by land clearing and construction activities and equipment. These effects would be temporary and would not be significant. The addition of landscaping materials and vegetation after construction would mitigate such adverse effects.

All bridge and ferry alternatives except for G4 would provide new view opportunities of the landscape and townscape from Tongass Narrows in all directions for pedestrians, cyclists, and vehicles utilizing the crossing. The views would be most dramatic from the taller bridge structures.

The following Subsections 3.2.1 through 3.2.16 describe the specific effects of the alternatives on key views.

3.2.1 Key View 1 with Simulation of Alternative F3

This view includes the 60-foot-high span across the East Channel of Tongass Narrows to Pennock Island. Major elements of this view that are predominant in the existing and simulated views are the distant townscape, the forested ridge and forested areas of Pennock and Gravina islands, and the skyline of Revillagigedo Island. The bridge structure would be compatible with the landscape. Alternative F3 would have no substantial effect on the visual quality of View 1.

3.2.2 Key Views 2 and 2A with Simulations of Alternative F3

This view includes the 60-foot-high span across the East Channel of Tongass Narrows to Pennock Island. The bridge structure would affect views of the distant townscape and waterway. Views of the side of the bridge structure just above the Tongass Highway would have a minor effect on visual quality of this view due to the reduction of natural water and vegetation elements. Overall, Alternative F3 would have no substantial effect on this viewshed.

3.2.3 Key View 3 with Simulation of Alternative F3

The addition of the bridge connecting Revillagigedo and Pennock islands would alter the skyline of this view. The horizon line of the waterway would not be affected, as it would remain visible below the bridge structure. The man-made dolphin pile group is a dominant existing form in the waterway, and the bridge structure would be visible slightly above the dolphin. This visual element would be unchanged by the bridge. The proposed structure occupies a relatively small portion of the view. Alternative F3 would not substantially impact the overall quality of this view.

3.2.4 Key View 3A with Simulation of Alternative C3(b)

The bridge would be visible beyond the Ketchikan townscape and against the Gravina Island ridgeline across Tongass Narrows. Similar to the appearance of Alternative C4 from this view (Section 3.2.5), the bridge's northern terminus would not be visible behind the mid-town structures. The maximum elevation (120 feet) of Alternative C3(b) is lower than that of Alternative C4 (200 feet), and the C3(b) alignment is slightly further north of the C4 alignment, thus C3(b) has a slightly lower profile against the background landscape features than does Alternative C4. The bridge presents a highly visible new element in the landscape, but is generally compatible with the existing visual quality of the view, since this view contains substantial urban structural elements. Overall, the visual quality of this view would moderately be affected.

3.2.5 Key View 3A with Simulation of Alternative C4

The profile of the bridge structure would be visible against the Gravina Island ridgeline, but its termination on Revillagigedo Island would be behind the larger mid-town structures of the Plaza area and Tongass Towers. Alternative C4 would moderately affect the view of the townscape, the Revillagigedo Island shoreline, or the Tongass Narrows waterway horizon.

3.2.6 Key View 3A with Simulation of Alternative D1

Similarly to Alternatives C3(b) and C4, the 120-foot D1 structure would be visible in this view. Because it is closer to the viewpoint, the structure's profile would be similar to that of Alternative C4, even though the maximum height of D1 is lower (120 feet). The overall visual quality of this view would not be substantially affected.

3.2.7 Key View 4 with Simulation of Alternative F3

From the relatively high vantage point of this view, the 60-foot bridge structure would be visible near the horizon above numerous town structures. It would occupy a small portion of the view and would have no substantial effect on visual quality.

3.2.8 Key View 5 with Simulation of Alternative C4 and Key View 5A with Simulation of Alternative D1

The views' foregrounds comprises the town structures along the Ketchikan waterfront, from the City float to the Plaza and Bar Harbor area and the adjacent Tongass Narrows, along with the wooded upland hillside. The bridge profiles would be visible above the town structures in the distance, with the Gravina Island landscape visible beyond. The alternatives would have no substantial effect on visual quality because the proposed structures would be a minor new visual element in views featuring urban and structural elements. The natural visual elements of these viewsheds would not be diminished with the addition of the bridges.

3.2.9 Key View 6 with Simulations of Alternatives C3(b), C4, and D1

The predominant visual element in this view is the berthing facility of the AMHS and nearby ASD structures. The bridge structures associated with these alternatives would add a dramatic section in the skyline to the northeast, but remain below the adjacent landscaped ridgelines of both Gravina and Revillagigedo islands. The structures would be similar in character to the view's existing industrial infrastructure. Alternative C3(b) would have a much lower profile, and thus have less visual impact, than Alternatives C4 and D1 because of its height and distance from the viewpoint. Overall, the visual quality of this view would not be substantially affected because the natural elements of the view would remain undiminished.

3.2.10 Key View 8 with Simulation of Alternative G2

The view north of the Gravina and Revillagigedo islands' shorelines includes intermittent man-made waterfront structures at various locations. The ridgeline of the Cleveland Peninsula is visible in the central background. A ramp and docking facility for a new airport ferry would add infrastructure of similar visual character and scale to terminal points on each shoreline. Alternative G2 would not affect the visual quality of this view.

3.2.11 Key View 10 with Simulation of Alternative F3

The view includes the northern end of Pennock Island as well as both the East and West channels of Tongass Narrows, and Revillagigedo and Gravina islands from the middle of Tongass Narrows near the airport. Changes to the view would include the addition of the bridge profiles in the distance, which would have no substantial effect on visual quality.

3.2.12 Key View 10A with Simulation of Alternative D1 and Key View 11 with Simulations of Alternatives C3(a)/(b) and C4

The addition of the elevated bridge structure would dramatically alter the view toward town and the airport. The new structure would cross Tongass Avenue, and sweep downward toward the airport, with supporting piers in Tongass Narrows and along the airport zone waterfront. These alternatives would introduce a new structure across Tongass Narrows, but the existing views already include infrastructure (roadway, airport, and overhead utilities) and development. Alternatives C3(a)/(b), C4, and D1 would substantially affect this view because of the relative size and proximity of the structures to the viewpoint. However, the ultimate detailed design of the structure (for any alternative as well as this one) would significantly influence the type and intensity of its visual impacts.

3.2.13 Key View 12 with Simulation of Alternatives C4 and D1

The addition of the bridge would create a new dominant horizontal element in the skyline. Views of adjacent waterfronts of Gravina and Revillagigedo islands would be affected by the presence of the elevated structure. Alternative D1 would present changes to this view that are similar to the changes resulting from Alternative C4, but the D1 structure would be closer and slightly lower in the skyline, and some of the structure would be behind the foreground group of transient boats and waterborne vessels. Design elements such as color, texture, materials, proportions, lighting, pier form, and orientation would be important in maintaining the general quality of Ketchikan's visual setting with the addition of either of these bridges.

3.2.14 Key View 13 with Simulation of Alternative G3

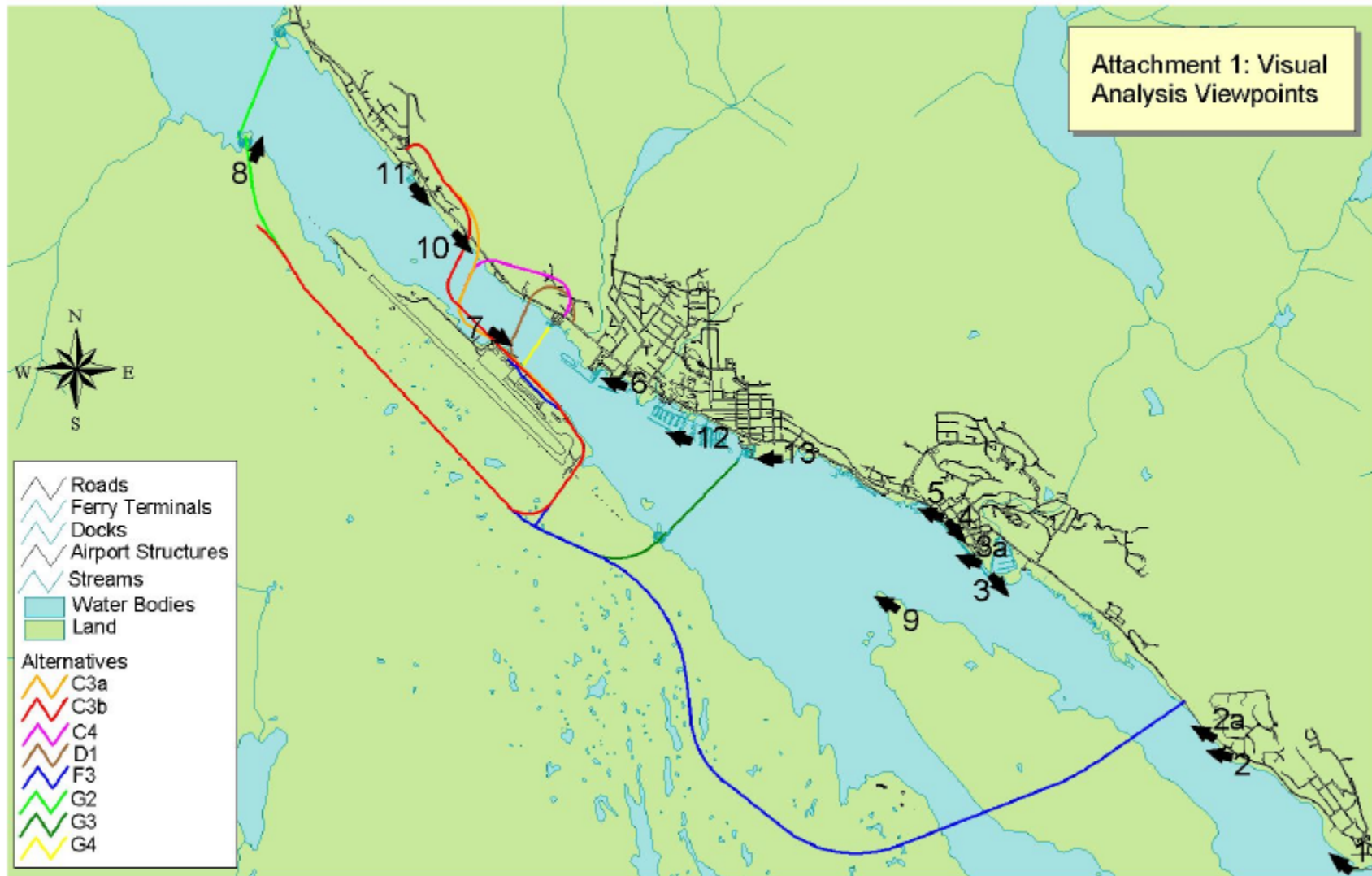
The view is dominated by foreground shoreline urban development. The addition of ferry facilities would expand the shoreline development in this area and would remove an existing structure to accommodate vehicle parking associated with the ferry facilities. This new infrastructure would be minimal and consistent with the character of local shoreline development. Alternative G3 would not affect the visual quality of this view.

4.0 Conclusion

The alternatives considered in the Gravina Access Project would change the existing views at key viewpoints throughout the project area. In general, the bridge alternatives—C3(a)/(b), C4, D1, and F3—would have greater visual impacts throughout the project area than would the ferry alternatives. Those impacts would be most notable in proximity to the bridge structures. While bridge alternatives would, to varying degrees, represent new visual elements in most viewsheds, none of the alternatives introduces a man-made element to an otherwise pristine or natural setting.

Attachments

Attachment 1 (Visual Analysis Viewpoints) and Attachment 2 (Photographs of Existing Conditions and Simulations of Alternatives) are on the following pages.



Attachment 2
Photographs of Existing Conditions and Simulations of Alternatives

KEY VIEW 1 – EXISTING CONDITION



KEY VIEW 1 – ALTERNATIVE F3



KEY VIEW 2 – EXISTING CONDITION



KEY VIEW 2 – ALTERNATIVE F3



KEY VIEW 2A – EXISTING CONDITION



KEY VIEW 2A – ALTERNATIVE F3



KEY VIEW 3 – EXISTING CONDITION



KEY VIEW 3 – ALTERNATIVE F3



KEY VIEW 3A – EXISTING CONDITION



KEY VIEW 3A – ALTERNATIVE C3(B)



KEY VIEW 3A – ALTERNATIVE C4



KEY VIEW 3A – ALTERNATIVE D1



KEY VIEW 4 – EXISTING CONDITION



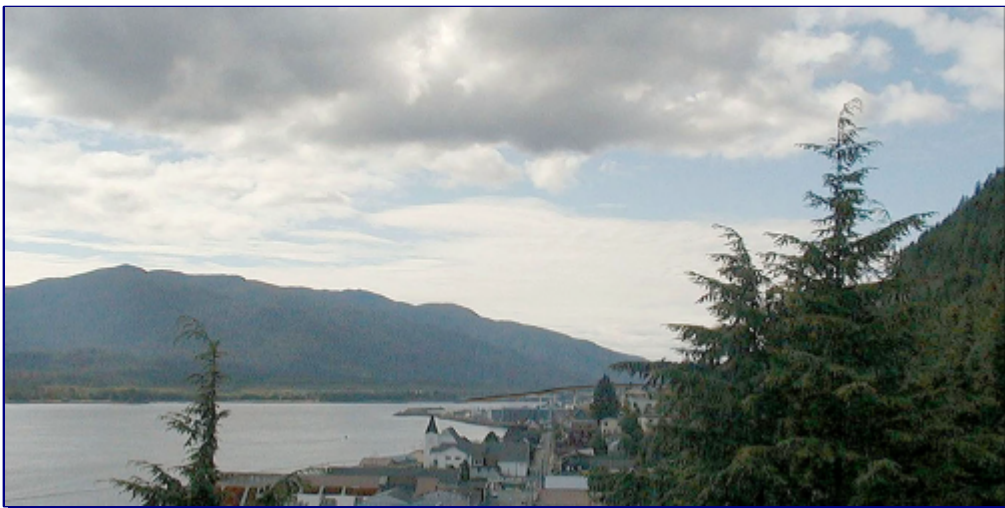
KEY VIEW 4 – ALTERNATIVE F3



KEY VIEW 5 – EXISTING CONDITION



KEY VIEW 5 – ALTERNATIVE C4



KEY VIEW 5A – EXISTING CONDITION



KEY VIEW 5A – ALTERNATIVE D1



KEY VIEW 6 – EXISTING CONDITION



KEY VIEW 6 – ALTERNATIVE C3(B)



KEY VIEW 6 – ALTERNATIVE D1



KEY VIEW 6 – ALTERNATIVE C4



KEY VIEW 8 – EXISTING CONDITION



KEY VIEW 8 – ALTERNATIVE G2



KEY VIEW 10 – EXISTING CONDITION



KEY VIEW 10 – ALTERNATIVE F3



KEY VIEW 10A – EXISTING CONDITION



KEY VIEW 10A – ALTERNATIVE D1



KEY VIEW 11 – EXISTING CONDITION



KEY VIEW 11 – ALTERNATIVE C3(A)



KEY VIEW 11 – ALTERNATIVE C3(B)



KEY VIEW 11 – ALTERNATIVE C4



KEY VIEW 12 – EXISTING CONDITION



KEY VIEW 12 – ALTERNATIVE C4



KEY VIEW 12 – ALTERNATIVE D1



KEY VIEW 13 - EXISTING CONDITION



KEY VIEW 13 - ALTERNATIVE G3

